A mathematical model to describe religious beliefs.

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Abstract

The work consists in build a mathematical model to describe the evolution of the Holy Trinity from a system formed with differential equations that correspond to the God the Father, God the Son, and God the Holy Spirit. Thanks to this, it was possible to obtain an analytical solution of time, and it shows that God the Son is the point of convergence of creation.

Keywords: Trinity; God; differential equations; Jesus Christ; Holy Spirit; mathematics perspective.

Introduction

Christian theology teaches us that Jesus is the Second Person in the Holy Trinity. He is the Son of the Father, incarnate of the Blessed Virgin Mary through the work of the Holy Spirit becoming man. With these religious beliefs, it is possible to formulate a system of three differential equations that is capable of describing the Triune nature of God.

Up to date, logic and philosophy have been used to explain the existence of God such as the Ontological Argument formulated by Saint Anselm of Canterbury (1033-1109). However, more than a thousand years have passed since it was presented and we are still unable to prove His

existence, much less validate scientifically that God is both One and Triune, without underestimating the philosophical reflexions provided by Gottfried Leibniz (1646-1716), Charles Hartshorne (1897-2000), Kurt Gödel (1906-1978), Ludwig J. Wittgenstein (1889-1951), Wolfgang Pannenberg (1928-2014), Joseph Ratzinger (born in 1927**),** among others.

For that reason, the present work suggests that a system of differential equations based on the fact that God is Triune in nature. I believe that there is a truth where we start with the fact that Jesus has two natures: God and human, affirming that He never lost his divinity, nor could have done so, because Christ is God in the flesh (Jn. 1:14; Jn. 8:58), and it is God without ceasing to be a man (Col. 2:9). Thanks to this, a mathematical model described through mathematical equations is presented for the first time in the scientific literature.

The model

As indicated above, the mathematical model is based on the three individuals form the Holy Trinity. The Father (represented with the variable G), the Son (variable J), and the Holy Spirit (variable E) are modeled with the following differential equations:

$$\frac{dG}{dt} = -\alpha G - \Omega G = -(\alpha + \Omega) G \tag{1}$$

$$\frac{dE}{dt} = \alpha G - ßE$$

$$\frac{dJ}{dt} = \Omega G + ßE$$

The constants α, ß, and Ω are considered to be real and positive coefficients (different than zero) and represent the properties in each of the components of the Trinity, it means, the Father, the Son and Holy Spirit, respectively.

It must be taken into account that the three form the divine unity, and must be satisfied that G+E+J=1 which allows us to rewrite the expression of the Holy Spirit as E=1-G-J, and the previous system can be reduced to only two equations:

$$\frac{dG}{dt} = -(\alpha + \Omega) G \tag{2}$$

$$\frac{dJ}{dt} = (\Omega - ß) G - ßJ + ß \tag{3}$$

In the next section this system of equations will be solved.

Discussion of results

The mathematical methodology that allows us to solve the system of equations above has been previously published in a range of scientific publications[1-4], and therefore I only show the results.

The first step is to obtain the equilibrium point (PE) of the system described by equations 2 and 3. When solving for the equilibrium point, there is a single point that corresponds to the following coordinates:

PE: [G=0, J=1]

As seen in the previous result, this coordinate is constant in time, and centered on Jesus, the Son of God.

The next step is to know if such value is stable over time. To do this, we must determine the Jacobian of the system and evaluate it at that equilibrium point. So, the Jacobian obtained from this system is simply:

α ß Ω

$$J=\begin{pmatrix} -(\alpha+\Omega) & 0 \\ \Omega-ß & -ß \end{pmatrix}$$

This result tells us that the system only depends on the value of these constants. It only remains to determine the eigenvalues of the system, keeping in mind that negative values indicate that the system is stable over time.

When I calculate them, only two possible eigenvalues are obtained and equal to: - ß, -(α+Ω). So the equilibrium point (G=0, J=1) is a solution that is stable over time and independent of the values of the positive real constants.

Figure 1 shows a vector diagram $\dot{J}$ vs $\dot{G}$ which represent to dJ/ (dt) *vs* dG/dt, showing how the solution of the system of equations converges at the equilibrium point (G=0, J=1). This result can be interpreted by saying that the evolution of God converges into Jesus. He becomes the revelation of the Triune God.

I must highlight two important aspects that allow us to understand this result, that is, God converges into one which is Jesus. First of all, remember the works of the Jesuit priest Pierre Teilhard de Chardin (1881-1955) where he highlights the role of the Christian Trinity in indicating that the objective of man is to reach the Omega Point, that is, to reach Christ[5], so the figure 1 reflects the convergence at the Omega Point suggested by Teilhard de Chardin.

And secondly, the scientific works Frank Tipler (born in 1947) that formulates a physics where the curves of light and time converge in the final destiny of man, just the Omega Point, where the rays of light of all the people that have died, of all the people who live now and of all the people who will live thousands of years later, intersect there, at the Omega Point[6].

In the following, we obtain an analytical solution of the system of equations proposed in this work that will allow us to describe the Trinity in time.

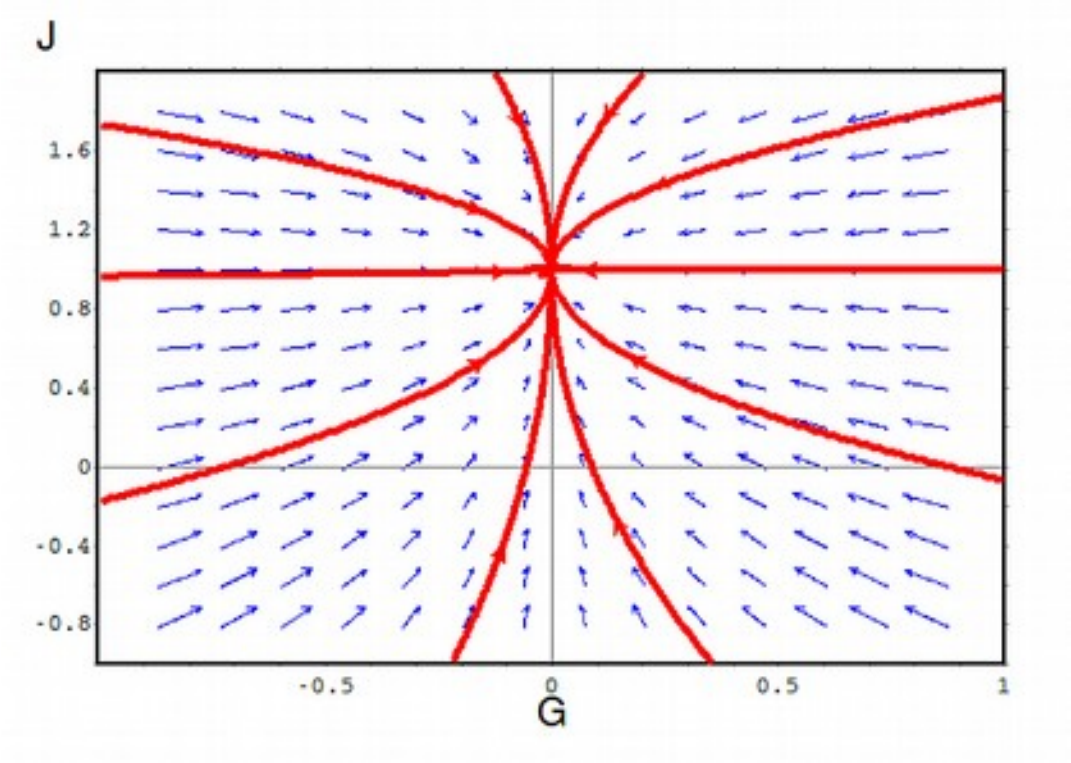

Figure 1. Vector diagram obtained from the system of equations described with equations 2 and 3, where $\dot{J}$ represents the component of the Son of God, and $\dot{G}$ corresponding to the Father. This diagram assumes that all constants are equal to one, and the trajectory is shown in red where they converge at the position of the equilibrium point equal to (G=0. J=1)

An Analytical solution

The first step to solve the system of equations corresponding to God the Father (equation 2), which can be directly integrated, and we obtain:

$$G(t)=c_1 e^{-(\alpha+\Omega)}$$

where c_1 is an integration constant. To determine this value, we consider that at $G(t=0)=G_0$, such that G_0 represents the substance or essence of God the Father, the "*I am who I am*" (Ex 3,14); so that the expression of the Father is simply:

$$G(t)=G_0 e^{-(\alpha+\Omega)} \tag{4}$$

From equation 3, it is possible to obtain the equation for the Son of God where I substitute the expression of the Father obtained previously (equation 4), and rearranging terms:

$$\frac{dJ}{dt}+ßJ=(\Omega-ß)G_0 e^{-(\alpha+\Omega)t}+ß$$

Integrating this equation leads to:

$$J(t)=-(\Omega-ß)G_0 e^{-(\alpha+\Omega)t}+c_2 e^{-ßt}+1$$

where c_2 is another integration constant. To determine its value, it is evaluated taking into account that at $J(t=0)=J_0$, such that J_0 corresponds to the essence of the Son of God. In this way the final expression is:

$$J(t)=\frac{(ß-\Omega)}{\alpha+\Omega-ß}G_0[e^{-(\alpha+\Omega)t}-e^{-ßt}]+e^{-ßt}(J_0-1)+1 \tag{5}$$

It is an expression where the essence of the Father is linked with that of the Son.

Finally, the expression for the Holy Spirit is calculated by taking into accounts that E=1-G-J, so that by replacing the expressions of the Father (4) and the Son (5) and rearranging terms, we arrive at the following expression:

$$E(t)=\frac{-\alpha G_0 e^{-(\alpha+\Omega)t}}{(\alpha+\Omega-ß)}-\frac{(ß-\Omega)e^{-ßt}G_0}{(\alpha+\Omega-ß)}-e^{-ßt}(J_0-1) \tag{6}$$

It is basically a negative function and it is necessary to develop other works in the theological field to explain this result.

As it has been indicated in multiple occasions in the work, it must be fulfilled that the three individuals are a unit, so that when adding the results obtained in the equations 4, 5 and 6 that correspond to God the Father, the Son, and the Holy Spirit, respectively, we corroborate that it is indeed one, that is:

$$G(t)+E(t)+J(t)=1 \tag{7}$$

Note: It is easy to demonstrate that the equation of God the Son could be modifying when evaluated it at t = 1, J=1 (will be published in a future paper), obtaining:

$$J(t)=1+AG_0e^{-(\alpha+\Omega)t}-\frac{e^{-ßt}}{B}$$

Where $A=\frac{(ß-\Omega)}{(\alpha+\Omega-ß)}$ and $B=e^{\alpha+\Omega-ß}$ (this demonstration as well as the numerical details will be published in another paper).

Conclusion

Based on the fact that God is Triune in nature, it was possible to introduce three differential equations capable of mathematically describing the divine unity. The Figure 1 tells us that evolution converges in Jesus, according to what is written in the New Testament: "*I am the way and the truth and the life. No one comes to the Father except through me*" (Jn. 14:6). Also, this figure shows that Jesus is a point of convergence of evolution, the Omega Point defined by Teilhard de Chardin, and later adopted by Wolfhart Pannenberg, Frank Tipler among others. This evolution converges in Jesus. In fact, the Bible tells us, "*I am the Alpha and the Omega," says the Lord God, "who is, and who was, and who is to eat, the Almighty*" (Ap. 1:8).

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Letter to the editor: A mathematical model to describes religious beliefs

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Abstract

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Carta al editor: Un modelo matemático para describir creencias religiosas

Resumen

El trabajo consiste en proponer un modelo matemático capaz de describir la evolución de la Santísima Trinidad a partir de un sistema de ecuaciones diferenciales que corresponden al Dios Padre, Dios Hijo y Dios Espíritu Santo. Gracias a ello fue posible obtener una solución analítica capaz en describir la Trinidad en el tiempo, y poder sugerir que Jesucristo es el punto de convergencia de la creación.

Palabras clave: Trinidad; Dios; ecuaciones diferenciales; Jesucristo; Espíritu Santo; perspectiva matemáticas.

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1. Introducción

La teología cristiana nos enseña que Jesucristo es la segunda persona de la Santísima Trinidad, el Hijo del Padre, encarnado de la Santísima Virgen María por obra del Espíritu Santo haciéndose hombre. Bajo en estas verdades religiosas es posible formular un sistema formado por tres ecuaciones diferenciales que describen a cada una de las personas que conforma la Trinidad.

Hasta la fecha no existe ningún trabajo en el campo de las matemáticas, y mucho menos donde se utilice un sistema de ecuaciones diferenciales que permita describir a Dios Uno y Trino.

Por ende, el grado de aceptación del trabajo dependerá de las creencias religiosas de las personas, en vista que el soporte teórico parte del hecho que Jesús tiene dos naturalezas: la de Dios y la humana, es decir, Jesús es Dios en la carne (Jn 1,14; Col 2,9; Jn 8,58), y también es hombre (Col 2,9). En virtud de ello, se presenta un modelo matemático capaz de describir la naturaleza trinitaria por primera vez en la literatura científica.

2. El Modelo

Como se indico en la Sección 1, el modelo está basado en la verdad que afirma que el Padre es Dios, el Hijo es Dios, y el Espíritu Santo es Dios, los cuales están representados con las variables G, J y E, respectivamente, a partir del Sistema de